



Decommissioning news.

A newsletter to inform the public about NASA's Decommissioning Activities.

NINETEENTH EDITION JUNE 2006.

NASA Moving Forward on Cleaning Pipes, Gathering Data for Next Steps.

What a difference a year makes. In 2005, NASA assembled a team of experts to determine the best way to deal with residual contamination existing in embedded piping, pipe systems encased in concrete and as much as 25 feet below ground in Reactor Facility buildings. The team tested the effectiveness of a variety of techniques for removing the contamination, which was present in the form of rust inside the pipes. Based on the evaluations, "We were confident that we could clean the pipes," said NASA's Acting Decommissioning Project Manager Keith Peacock.

To date, workers have decontaminated more than a mile of the 2.2 miles of process piping that formerly served the Reactor Facility, completing the cleaning and subsequent surveying (to ensure project cleanup levels have been met) in three buildings, with work progressing in two others. According to Peacock, most cleaning is done by mechanical means, using a "chain flail" that rotates through the pipes to remove the rust, which is

NASA Announces Results of Off-site Sampling in Plum Brook.

In mid-April, NASA completed taking and analyzing more than 1,200 sediment samples from areas along Plum Brook. Samples were taken in a 1.5-mile area, from the NASA Plum Brook Station fence line to U.S. 250. Results of this comprehensive effort show that none of the levels pose any health concerns to area residents, including small children or workers. NASA shared these results with neighbors whose properties were sampled, as well as with the U.S. Nuclear Regulatory Commission (NRC), the Ohio Department of Health (ODH), and other state and county agencies.

None of the levels pose any health concerns to area residents, including small children or workers.

NASA also presented the results to the public at the Decommissioning Project's quarterly Community Workgroup meeting in April. Of the 1,223 total samples collected, the average reading was below 3 picocuries per gram. A picocurie is one trillionth of a curie, which measures radioactivity in terms of energy (or disintegrations) given off per second. There were a few areas with elevated readings of one specific isotope Cesium 137 above the range of 12-14.7 picocuries per gram. While federal and state agencies have not set any specific cleanup or action levels, 12-14.7 picocuries is the range NASA is using as the proposed Cesium cleanup level for the reactor site.

According to Rod Case, the project's Assistant Radiation Safety Officer, "The good news is that we did not detect any activity in 60% of the samples. They were all less than one picocurie, which is below what are considered normal background levels for this part of northern Ohio." He added that fully 90% of all samples were at six picocuries or lower, less than half the proposed cleanup level. Fewer than 2% of the samples (23 out of 1,223) were above the 12-14.7 picocuries range, with the highest level a single reading of 50 picocuries, found in the area between the NASA fence line and Clark Road. These relatively few elevated areas were generally surrounded by other areas that



were either just slightly above, or right at, normal background levels. No activity above background was present in the surface water of Plum Brook.

The extensive sampling program began in November 2005. NASA took 747 random and 367 targeted samples at three depths: from the surface to 6 inches below; 6-15 inches below; and 15-24 inches below. A total of 109 samples were taken and "split" for analysis by outside labs contracted by NASA, to perform independent quality control. Split samples were also taken for analysis by NRC and ODH labs. Random samples were based on a predetermined geographic distribution, with NASA laying out a grid of the entire area to be sampled. Targeted samples were taken in areas where elevated readings were found, using very sensitive instruments to identify the presence of any radioactivity above 6 picocuries per gram. Case said taking both kinds of samples "gave us a really good picture of what contamination might be there." All of the results – those analyzed by NASA and those "split" with other agencies – were consistent, again with an average reading of less than 3 picocuries.

Results of this effort are consistent with the more limited sampling done last fall. Those results showed some areas where there was Cesium above background levels, but they posed no health concerns. After a thorough review of records, NASA confirmed that the Cesium had likely resulted from a small fuel abnormality at the Reactor Facility, which was located and corrected in October 1968.

While the results of all sampling data are being

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■ In the photo in the upper right handcorner of this article, Two workers stand in Plum Brook. The worker at the right is using a shovel to take a sample from the brook's bank.

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OFF-SITE SAMPLING (CONTINUED FROM PAGE 1).

reviewed by the NRC and ODH, Pat Isaac, the NRC project manager overseeing the Decommissioning, concurred with NASA that the levels in Plum Brook pose no health risk. He also noted that the NRC had undertaken a site inspection of the Decommissioning Project (including Plum Brook survey results) the week of January 17 and determined that "NASA's response (to the sampling issue) was appropriate," adding that the NRC report was available in the "virtual reading room" on the agency's Website at www.nrc.gov/reading_rm/adams.html.

Acting Decommissioning Project Manager Keith Peacock stated that based on these findings NASA would recommend spot cleanup in some places, with no cleanup needed in others, using the same proposed Cesium cleanup level as for the reactor site – the range of 12-14.7 picocuries per gram. He also noted that in some areas where NASA had removed a sample, the act of digging actually removed the contamination as well.

Peacock said one of NASA's sampling goals has been to determine how far downstream the Cesium has gone. Noting that between Bogart Road and U.S. 250, there were three elevated readings out of 90 samples in a 900-foot-long section, he said NASA was continuing to sample in an area from U.S. 250 to Route 2. He added that NASA was working with a local hydrogeologist to better understand how material may have moved down Plum Brook over time, and to more fully identify any other specific areas further downstream where sampling may be needed. To date, the results of this additional sampling are consistent with the April results, with some isolated elevated readings. Peacock anticipated that some sampling of Sandusky Bay and Lake Erie will also be part of this additional effort – and that all sampling and analysis will be completed later this summer. NASA will continue to update the public on its sampling progress, on the Decommissioning Project Website and Telephone Information Line. ■

■ In the photo in the upper right handcorner of this article, Workers take a sediment sample from the ground. The worker at the center is removing it by hand and preparing to place it in the plastic bag being held by his colleague at the right.



NASA MOVES FORWARD (CONTINUED FROM PAGE 1).



subsequently vacuumed. In a few cases, some piping has required additional cleaning. Workers used a hydrolaze, a powerful (20,000 pounds per square inch) pressure washer. Regardless of the methods employed, the pipes have been cleaned to the required standards, surveyed, and then filled with grout in order to immobilize them. Per NASA's Decommissioning Plan, anything more than three feet below ground can remain in place. Peacock said, "We're making good progress, cleaning about 250 feet a week," and anticipated that the cleaning and surveying of all embedded piping would be done by the end of October.



Peacock pointed out that embedded piping contamination was one of the "known unknowns" NASA committed to identifying when the approach to completing the Decommissioning was changed last August. Since then, smaller crews have taken a more focused approach to several tasks, including decontamination of the Hot Cells – seven rooms once used to analyze the results of experiments conducted when the reactor was operational. Efforts have focused on Hot Cell #1 – the largest room – where workers removed all fixed equipment, including four 20-ton concrete slabs that comprised its roof. Using hand-held drilling devices, workers "scabbled" concrete from the walls of the room (and from the roof slabs), surveying the concrete underneath to be sure it met cleanup levels. The roof slabs were then recycled as scrap concrete. Workers have also removed from Cell #1 two leaded glass, protective windows, each four feet thick. NASA will send the window glass to a licensed

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■ In the photo in the upper left hand corner of this article, Two workers in helmets are shown cleaning embedded piping on the ground floor of the Service Equipment Building. The worker at the right has inserted a vacuum hose into the pipe while the worker at the left is holding a probe on which is mounted a radiation detector.

■ In the photo in the lower left hand corner of this article, The overhead crane in the Reactor Building is shown lowering a 20-ton concrete roof slab from Hot Cell #1 into one of the building's quadrants for cleaning and surveying.

■ In the two photos in the upper right hand corner of this article, A worker in white protective gear uses a mallet to smash leaded glass removed from the windows of Hot Cell #1. The glass is shown in a container to the right.

Other ways to receive Decommissioning Information

Decommissioning Website
For project updates, fact sheets, newsletters, and to ask questions, visit us at www.grc.nasa.gov/WWW/pbrf.

**24-Hour
Toll-Free Information Line**
For recorded project updates and to ask questions, call **1-800-260-3838**.

Community Information Bank
To review documents, visit the Decommissioning Project information repository at the BGSU Firelands Library.

Speakers
To arrange for a NASA representative to make presentations to civic, community and school organizations, contact **Sally Harrington**
NASA Public Affairs Specialist
216-433-2037, or
email: s.harrington@grc.nasa.gov
or call 1-800-260-3838.

Watch for our next newsletter edition this October.



ON THE CASE Putting Exposure Information in Context.

Since last October, NASA has been joined by the U.S. Nuclear Regulatory Commission (NRC), the Ohio Department of Health (ODH) and the Erie County Health Department in stating to the public that there is no health risk associated with the trace amounts of Cesium found in sediment in some locations of Plum Brook. To better explain how health and other professionals made that determination, NASA provided a primer on radiation and exposure at the Decommissioning Project's quarterly Community Workgroup meeting, held on April 25.

Rod Case, the project's Assistant Radiation Safety Officer, emphasized that the overall average of 2.7 picocuries per gram – for 1,223 sediment samples taken adjacent to Plum Brook – was “extremely low.” He noted that a picocurie is one trillionth of a curie, the standard measure of radioactivity. Case also explained that the presence of radioactivity alone does not mean there is exposure to an individual or that someone has received a “dose.” He noted that dose is measured in “rems.” Case said the average person in the U.S. including northemOhio is exposed to 360 millirem (about a third of a rem) each year from what is termed background radiation This includes exposure to a variety of naturally occurring radiation sources (see illustration below). Case stressed that determining someone's possible dose involves examining all the ways that someone could be exposed, including direct (exposure), inhalation and ingestion.

To estimate the possible maximum dose someone could receive from the levels of radioactivity found in Plum Brook, NASA assumed that a child would play in an area of Plum Brook, 25 feet long, by 16 feet wide, and 1.5 feet deep. Next, Case said, “We asked: How much time is a person going to be there?” NASA estimated that a child might spend four hours every week, for eight months of the year, playing outside in that same area (or a total duration of 140 hours). Although the average reading was 2.7 picocuries per gram, NASA used the assumption that the entire area a child would play in was at the highest reading found: one isolated sample of 50 picocuries per gram. Based on all these assumptions, NASA determined that the dose a child might receive from all possible exposure routes from Plum Brook sediment would be 2 millirem per year. Case pointed out that this additional amount was less than 1% of the total 360 millirem dose a person is exposed to each year.

The agencies involved in overseeing decommissioning and NASA's off-site sampling in Plum Brook agree that the levels found do not pose a health risk to children, residents or workers in the area.

NASA remains committed to protecting the safety of the public, the workers and the environment on all aspects of decommissioning. If you have any questions about exposure or any aspect of the Decommissioning Project call our toll-free Information Line at 1-800-260-3838 (press Option 4 to leave a message); or leave a question in our Project Website mailbox at www.grc.nasa.gov/WWW/pbrf. ■

■ In the photo in the upper left hand corner of this article, A worker used a sodium iodide detector, attached to a data logger, to survey radiation in soil just outside Plum Brook Station, with the NASA fence line in the background.

COMMUNITY WORKGROUP MEMBER PROFILE.



Sharon Schaeffer.

She provides Erie County with an informative, reassuring voice on health issues. Now she brings this voice to NASA, as a Community Workgroup member. Sharon Schaeffer

has been a nurse for 20 years and has, since 1999, worked with the Erie County Health Department. As the County's Epidemiologist and Public Health Coordinator, she is the point person on communicable disease issues and, in April, was featured on WLEC's “Early Edition” program. She said part of her job involves answering questions from the community that often reflect “the flavor of the week. One week it's avian flu. The other it's bacterial meningitis.”

Schaeffer's participation as a Workgroup member continues a tradition of close cooperation between the Health Department and NASA. The late Steve Casali, who served as Commissioner until 2004, was a founding Workgroup member and continued throughout his departmental tenure. “NASA does a good job communicating information on the Decommissioning Project,” Schaeffer observed. “But when there are health questions, it's good to have Health Department representation (on the Workgroup), since we have developed such a good rapport with the community.”

The Castalia resident joined the Workgroup last October, as NASA was sharing information with the public on the discovery of trace amounts of Cesium in some Plum Brook sediment (see article on page one). She recalled, upon joining, receiving a few calls from both “people I knew” and members of the public, “based on the articles that were in the papers.” The Health Department was quick to confirm what other agencies had said in assuring the public that the levels did not pose a health risk, and Schaeffer said the calls she received were “seeking reaffirmation” that there was no risk.

Schaeffer graduated from the Providence Hospital School of Nursing, and is currently working to complete a Bachelor's Degree in Nursing from Bowling Green State University. She will be joined as a college student this fall by her son, Jonathan, who will attend Wilmington (OH) College after graduating with honors from Margaretta High School, where daughter Lindsay (a fellow Honors student) enters her junior year. Her husband, Chris, is a firefighter for the City of Bucyrus.

Schaeffer says she enjoys serving on the Workgroup, describing it as “very diverse; members have many different backgrounds and interests.” She sees this as a strength, noting, “It helps when community members have questions. They get answers from people they can relate to; they don't see (the Workgroup) as being above them.” And she looks forward to helping NASA continue to provide answers as the project proceeds.

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NASA MOVES FORWARD (CONTINUED FROM PAGE 2).



■ In the photo in the upper left hand corner of this article, Using a radiation detector, a worker characterizes the concrete wall of a Reactor Building quadrant.

disposal facility as mixed waste (a combination of lead and low-level radioactive waste).

According to Peecook, "Our experience in decontaminating Hot Cell #1 has helped us determine the best approach to the other cells. We have also been able to look at the cost for decontamination versus demolishing the rooms and packaging the various material as low-level radioactive waste" (LLRW), for disposal at a licensed facility (an approach known as "rip and ship"). The latter approach would increase disposal costs, but reduce decontamination costs, and shorten the project work schedule. NASA Headquarters will also conduct a cost analysis before a decision is made on how to proceed.

Characterization work is also progressing throughout the Reactor Facility, especially in the walls of the former quadrants and canals in the Reactor Building. Peecook said the walls had been covered with fiberglass matting, coated with an epoxy paint, which served to protect the concrete in the walls. But the bonding material used to attach the fiberglass to the concrete contained asbestos, which had to be removed so NASA could take "core borings" into the walls, to determine how much contamination the concrete contained. Asbestos was removed from 365 "hot spots." Peecook said there was good news in that "We're finding only limited contamination in the concrete under the asbestos."

In the next few months, Peecook said NASA will continue to work on resolving the remaining project "unknowns." By late 2007, he expects NASA to develop a Request for Proposals, for completing the remaining major decommissioning work. ■

LEARN MORE ABOUT NASA's Decommissioning Project.

Next Community Workgroup Meeting.
TUESDAY, AUGUST 8, 7 p.m. - 9 p.m.
Huron Public Library (Meeting Room A)
333 Williams Street, Huron.

THE MEETING IS OPEN TO THE PUBLIC.